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EDITORIAL NOTES

PREPAREDNESS

DURING the year prior to the war gas undertakings throughout the country busied themselves with air raid precautions schemes, and during the first year of the conflict they carried on the good work of perfecting their plans not only for ensuring as far as possible continuity of gas manufacture in the event of enemy bombing finding its target on gas-works but also in rendering their distribution systems flexible under severe damage, as safe as possible to the public in the event of fractured mains and services, and also quickly remediable. That work went on steadily and thoroughly and it has now had occasion to prove its worth. The first year of war saw the Gas Industry's A.R.P. personnel—or at any rate a considerable portion of it—not exactly idle but certainly not overworked. But exercises were the order of the day and each day, and the work involved in protecting gas-making plant from the effects of blast and splinter, and in valving and sectionalizing mains continued. The organizations established in various parts of the country have now had the opportunity of being tested for the activities for which they were designed, and they have not been found wanting. We have witnessed their operations at first hand and the smoothness and efficiency with which they carry on with repair jobs the reverse of easy is gratifying. One hesitates to imagine the situation which would have presented itself had it not been for this prudent planning.

Not every town and every district, of course, has suffered or is suffering the same type or the same intensity of damage from enemy raiders. In those districts which have received the most "pasting"—and it is common knowledge that such "pasting" has been and is being experienced in South-East coastal towns and in parts of the great Metropolis—naturally most damage to the underground systems of public utility undertakings has been done; and in many instances—as was inevitable—the fracture of water mains has added to the difficulties of rapidly renewing a supply of gas to those consumers served by adjacent gas mains which have been severed at the same time. But the public can be assured that their temporary inconveniences are not in any way traceable to lack of forethought or lack of immediate and carefully-planned action by a very large staff of Gas Industry A.R.P. personnel. Could the general public have an insight into the determined and courageous way in which gas undertakings affected are working under conditions the reverse of pleasant and easy they would, we are quite certain, be astonished and would be loud in their praise of the manner in which "business as usual"—or at any rate approaching normal—is being made possible. "Gas never lets London down"—and this apt and factual slogan really applied to the Gas Industry as a whole—was true enough in the happy times of peace. It is not the fault of the Industry that London, in wartime, suffering from the effects of ruthless bombardment, should experience temporary interruption of gas supply in some districts from time to time. The same applies to some districts—surprisingly few—in other parts of Great Britain. The remarkable point is the manner in which these interruptions are being remedied and consumers afforded once more the incalculable benefits of an adequate gas supply. This applies to consumers in the home and in industry alike. Of course it is to be deplored that circumstances of war should have been responsible for bringing home to the public, as never before, the essential part which gas plays in their daily lives—in the production of essential goods and foodstuffs, in the cooking of foodstuffs on both large and small scale, in providing warmth, hot water, and light—in ways too innumerable to catalogue, were such detailing necessary to-day.

As we have said, individual undertakings have done all in their power to ensure continuity of gas supply and to afford protection during air raids for men and plant. Co-operative schemes for mutual aid exist among gas undertakings in certain areas, but perhaps in districts where the undertakings are not large an additional plan might be adopted which might prove useful. Not that there is not the fullest co-operation between gas engineers of adjacent undertakings. Great willingness to help each other in times of stress is traditional among gas engineers. A fortnight ago in these columns we referred to our impressions and our experiences on a visit to a gas-works on the South Coast which had been damaged a day or two previously, and we spoke of the ready help which had been extended to the engineer in charge of those works by fellow gas engineers in neighbouring districts. The thought occurred to us—and we believe that in this instance the idea has been mooted before—that perhaps some arrangement could be arrived at whereby mobile units of men and equipment could be established at points of seeming vantage so that they could rapidly reach any particular works where assistance was urgently required. The translation of this idea into practice may present a few problems, but their satisfactory solution should not prove too difficult.

A USEFUL SERVICE

So far we have been considering what may be termed the major activities of the Gas Industry in regard to Air Raid Precautions. We may well mention another type of helpful service which perhaps of less, cannot be regarded as of minor, significance. A booklet just issued by the London Region Gas Centre—it is a modest publication but one in which the information is most clearly set out for the layman—bearing the title "Notes on Town Gas for Air Raid Wardens" gives most valuable advice. It is written in a simple and straightforward manner, is free from what we may call "gas jargon," and is illustrated by a few simple line diagrams which admirably illustrate the essential recommendations to be found in it. Its object is to give wardens and other A.R.P. personnel guidance as to the steps they should take when confronted with damage to gas supplies in streets or in premises. There is no need for us to go into any detail regarding these recommendations here; for, as we have said, the booklet is written for the layman. We would, however, mention specifically one recommendation relating to gas pipes in buildings. It is this: "If these [*i.e.*, such pipes] are damaged, the first recourse should be to turn off the main cock at the meter if this is accessible." This, as will be seen, presupposes that the occupier of the premises has not turned off the gas on hearing that now familiar warning of the siren; and all things considered, we think that the turning-off of the gas by the occupier in these frequent circumstances does not make for maximum safety. In most areas of gas supply a large majority of the dwellings have in them modern appliances—it may be water heaters, it may be central heating equipment, it may be refrigerators—incorporating a pilot supply. Thus, to turn the gas off at the meter is not, in effect, to turn off the gas to the premises once the main tap to the meter is turned on again—unless, in the first instance, every pilot light is also turned off. Take, then, the case of an elderly lady. Has she, on the sound of the warning siren, (a) to turn off the gas at the meter (sometimes not too readily accessible); (b) turn off the gas pilot at the refrigerator, which involves stooping; (c) turn off the gas at the sink heater; and (d) finally, turn off the gas at the pilot to the central heating unit. This, of course, being a preliminary to seeking shelter in the basement or in an Anderson or other type of shelter.

On the other hand, if she turns off the gas at the meter only, can it be guaranteed that, after the "All clear" she will remember to go through the reverse of motions (b), (c), and (d)? Is it not possible that, after forgetting to turn on again the pilot tap of, say, the sink heater—or it may be one of the modern boiling water appliances—she may, after a little while, desire a cup of tea and attempt to ignite the gas. An explosion, however slight, cannot at this stage be reassuring to the consumer. And, of course, there is another aspect to the matter, and a by no means unimportant one, and it relates to "business as usual." Let us assume—and it is a reasonable assumption—that the warning siren sounds just when the gas supply to the oven has been ignited, the thermostat set to the appropriate number, and, say, a casserole inserted in the oven. If the gas is shut off at the meter, then obviously the preparation of the meal will have to be left till the "All clear" is sounded. Again, there are lulls in the storm of an air raid when the occupants of any premises may like, say, a cup of tea; a gas supply at once available is desirable. All of which seems to us to constitute a good argument for the consumer's not turning off the gas at the meter on hearing the sound of the air raid warning signal.

Personal

Mr. A. C. REA, for the past three years Engineer and Manager of the Perth Gas Department, has been appointed to a similar position at Bath. It will be recalled that Mr. Rea succeeded the late Mr. David Vass at Perth, to whom he had previously acted as assistant for a year. Prior to his appointment at Perth, Mr. Rea was on the staff of the Edinburgh Corporation Gas Department.

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In succession to Mr. C. B. WALLIS, who has retired as a result of ill-health, Mr. R. J. BRADSHAW has been appointed Engineer and Manager of the Bridgnorth Gas Department. Mr. Bradshaw began his career in the Gas Industry at Blackpool and has subsequently held posts with the Macclesfield (1929-35), Rochdale (1935-38), and Bath gas undertakings.

* * *

Mr. RICHARD LOCKEY, Engineer, Manager, and Secretary of the Morpeth Gas Light Company for the past 35 years, has retired following the merging of the undertaking with the Newcastle-upon-Tyne and Gateshead Gas Company.

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Mr. THOMAS ROYDEN has resigned his position of Engineer and General Manager of the County of Lanark Gas Undertaking owing to ill-health.

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Mr. J. SMITH, for some time Technical Assistant and Chemist with the Hinckley Gas Department, has secured a position with Coventry Corporation Gas Department, and has now taken up his new duties.

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Mr. A. W. COOPER, for 15 years Manager of the Bentham Gas Company, has been appointed to a similar position with the Whitchurch (Hants) Gas and Electricity Company. He is succeeded at Bentham by Mr. J. MASON, of Pontypridd.

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Mr. J. W. FELL, for 22 years Superintendent at the Basford Works of the Nottingham Corporation Gas Department, has retired.

Obituary

The death has taken place of Mr. DAVID CUNNINGHAM, formerly Convener of the Perth Corporation Gas Committee and a former senior Magistrate of the city.

Forthcoming Engagements

Sept.

19.—Gas Research Board.—Refractory Materials Joint Committee, 2.30 p.m.

26.—Gas Research Board.—Joint Committee on Complete Gasification under Pressure, 2.30 p.m.

26.—Wales and Mon. Association.—General Meeting at Cardiff, 11 a.m.

27.—Gas Research Board.—Joint Research Committee, 2 p.m.

27.—I.G.E.—Liquor Effluents and Ammonia Committee, 12.15 p.m.

Oct.

1.—Gas Research Board.—Finance Committee, 12 noon; Council, 2.30 p.m.

7.—I.G.E.—Finance Committee, 1.45 p.m.; Membership Committee, 2.15 p.m.; General Purposes Committee, 3 p.m.; Benevolent Fund Committee of Management, 4.30 p.m.

8.—I.G.E.—Council, 10 a.m.

9.—I.G.E.—Board of Examiners, 2 p.m.

15.—I.G.E.—Gas Education Executive Committee, 2 p.m.

The Tarporley Gas-Works have been purchased by Messrs. Wm. Kayley, Ltd., of Manchester.

Despite the Recent Increase in the cost of materials and wages, the Peterhead Town Council have fixed the price of gas at the same rate as for the past year.

Mains in Duplicate to serve 227 Council houses to be erected by the Council on the Dysart Road site at Grantham are to be laid by the Grantham Gas Company.

Eight Works Teams competed at Stinchcombe Hill this year for the trophy presented by Mr. Percy Lister (Chairman of Messrs. R. A. Lister & Co., Ltd., of Dursley (Glos.)), to mark the jubilee of the Stinchcombe Hill Club. The trophy was won by Messrs. T. H. & J. Daniels' team, and the cup was accepted for it by Mr. J. Daniels. The Lister team finished third. The competition for the main Jubilee Cup, open to clubs of fifty years of age and over, has been postponed until after the war. The Stinchcombe Hill course, famous for its view over thirteen counties, is now equipped with numerous additional "hazards" to discourage uninvited guests from abroad, which add alike to its normal interest and difficulty.

A Message to the A.G.A.

Sir Francis Joseph, President of the Society of British Gas Industries, sends us a copy of a letter dated Sept. 11, which he has addressed to Mr. Walter C. Beckjord, President of the American Gas Association, in reply to an invitation to attend the forthcoming convention of the A.G.A. The letter reads as follows:

"By this morning's post I received your kind invitation to attend the twenty-second Annual Convention of the American Gas Association, Oct. 7-10 next. It would have been a great pleasure to me to be present, especially as I have the honour of being President of the Society of British Gas Industries, but the war prevents it.

"In the first place I consider it to be the duty of every business man to be at his post until this job is finished. We who are responsible for production must do everything to increase it. Being daily at our post we can not only do our job but help others to do theirs.

"The British Gas Industry is making an important contribution to our war effort. Some day when the details are published it will be found that this old Industry has once again justified the public confidence it enjoys. It is not resting on its laurels. From the national standpoint its job has been well done.

"Lately we have been having a number of raids during the day and night. We feel that they will go on. If they do it will not make the slightest difference to our determination to see this job through to the end. There is only one end as far as we are concerned—we are going to smash Nazism and what it stands for. To do that we will risk everything we possess because it is impossible for us to live except we breathe the air of freedom.

"The sympathy which the American nation is expressing in so tangible a way is of tremendous importance to us. I don't know what the ordinary American citizen feels about this war, but I do know that the ordinary men and women of this country are greatly encouraged by reason of the practical help and goodwill which the great American nation is giving to us.

"May I be permitted to state our position. We are all right for food—the nation is splendidly fed. We are all right for courage—it was never greater. Best of all, we are all right for staying the course because we are certain we can last longer than our enemy. Above all things we know we are fighting for eternal principles and to preserve the moral law. Unless these are preserved the future holds no promise for the generations who will succeed us, so rest assured we will never quit until we have made certain that Democracy is the victor."

Sir Francis concluded by wishing Mr. Beckjord a pleasant and helpful Convention.

Corbet Woodall Scholarship in Gas Engineering

On the recommendation of the Corbet Woodall Scholarship Committee of The Institution of Gas Engineers, the Senate of the University of Leeds has awarded the Corbet Woodall Scholarship in Gas Engineering to Mr. Frank Chiltern Wood, of Leeds.

Mr. Wood, who attended Cockburn High School and has passed the Higher School Certificate of the Northern Universities Joint Matriculation Board, with distinction in Physics and Chemistry, will follow a course of study for the B.Sc. Honours Degree in the Department of Coal Gas and Fuel Industries at Leeds University.

The previous holder of the Corbet Woodall Scholarship in Gas Engineering since 1936, Mr. D. G. R. Davies, recently obtained his B.Sc. Degree in Gas Engineering at Leeds University and has entered the service of W. C. Holmes & Co., Ltd., of Huddersfield.

NORTH BRITISH ASSOCIATION OF GAS MANAGERS

The Annual Meeting of the North British Association of Gas Managers was held on Sept. 6 at the North British Station Hotel, Edinburgh.

Mr. H. A. AITKEN (Buckhaven and Leven), President of the Association, welcomed those present and expressed his pleasure at such a large attendance. Since their last meeting in the Spring, intensification of the national effort had added considerably to the responsibilities and exacting duties of those engaged in the Gas Industry and had doubtless caused the absence of some of their members. An Autumn meeting of the usual type had been abandoned because of present conditions, but the Council thought it desirable to arrange a meeting on a modified scale. He trusted the meeting would serve a useful purpose and provide much of interest to their members. The circumstances and situation of their country to-day were different from those prevailing when they held their Spring meeting, but the quiet confidence and dour determination animating their people were a sure augury that they would not fail and a prelude to victory. Their present necessity afforded greater opportunities to their Industry for more intensified effort and greater service.

The SECRETARY, Mr. Robert Sturrock, Ardrossan, read the minutes of the Spring meeting, which were approved.

The PRESIDENT made appropriate reference to the death of Mr. Samuel Milne, formerly Manager of the Aberdeen Corporation Gas Department, who became an ordinary member in 1904 and was elected a life member in 1939.

Apologies were intimated from various members of the Association and from members and office-bearers of kindred societies.

Presentation of Certificates

The President handed over to successful students certificates gained in connexion with the 1940 examinations held by the Institution of Gas Engineers in Gas Engineering (Manufacture) and (Supply), the following being the recipients:

Gas Engineering (Manufacture).—External, First Class, J. Sorley, Motherwell; Second Class, D. Gardner, Motherwell, J. Guyan, Aberdeen. Internal, First Class, A. Brock, Glasgow; Second Class, J. B. Fleming, Dumbarton, E. R. Sage, Perth.

Gas Engineering (*Supply*).—External, First Class, D. W. Davison, Aberdeen.

Certificate in Gas Supply.—External, Second Class, T. G. Pringle, Edinburgh.

"OBSERVATIONS ON POLICY"

Thereafter Mr. A. B. MUNRO, Edinburgh, read his paper on "Some Observations on Policy." This was published in last week's "JOURNAL."

Discussion

The PRESIDENT said that Mr. Munro had provided a most interesting and valuable paper on matters of importance to their Industry at the present time. It was brimful of data that should provoke an interesting discussion.

Mr. S. SMITH (Paisley) said they could always depend on Mr. Munro giving them something forceful and something to think about. He wished to thank him for a very interesting contribution to the Association's records. The figures submitted under the different headings were worthy of consideration—so worthy that he had been constrained to look into the records of the Paisley undertaking. He was unable, of course, to claim credit for any of the figures he might mention but, as a comparison, they might be interesting. The Paisley hire-purchase terms covered a period of five years, and no deposit was required, the first payment being made after one quarter, or, in the case of purchase through the meter, at the time of the next meter collection after installation. Previous to this, a deposit of £1 was taken on all hire-purchase agreements. The "no deposit" policy was adopted some five years ago in the face of intense electrical competition, and the results had been very satisfactory. During the year previous to its introduction they sold 115 high grade cookers, and for the twelve months following the figure was 1,024. These figures had been well maintained, in spite of the fact that they still continued to offer all their consumers a standard pattern cooker on free loan.

In comparison with the figures submitted, but excluding the period 1924-1934, which reduced the Edinburgh figure of 27,767 to 24,075, they sold at Paisley 4,450 cookers on hire purchase. Considering that the number of domestic consumers in Edinburgh was almost exactly 4½ times greater than in Paisley, the latter's figure multiplied by this factor would give 20,025, which did not appear to be too bad. He understood the Edinburgh figure had been boosted by the sale of a considerable number of high grade cookers to a housing development at Corstorphine. The Paisley percentage returns over the period 1934-1940 worked out at slightly under 12½ against the re-calculated Edinburgh figure of 5.4 for the same period.

In Paisley they also found a ready market for returned appliances, thus entailing no loss. The returns were usually sold on hire purchase, but the period was reduced from five to two years, which meant that they completed the payments within or before the time covered by the original sale. They had found without doubt that any risk involved through their hire purchase scheme had been well worth accepting.

In Paisley they offered gas fires on the same basis as Edinburgh, and their records over the past ten years for sale, hire purchase, and simple hire amounted to 6,000. Again multiplying by the factor of 4½ this figure became 27,000, against Edinburgh's total of 24,186 over the same period. In Paisley water heaters were also popular, particularly sink heaters. Their total sales of all types over the period mentioned by Mr. Munro amounted to 2,450. Applying the factor, this became 11,025 against 3,654. They did not put out any water heaters on simple hire.

The records of consumption were interesting, and showed clearly the potential load. They had no clear-cut information on this point, but on a survey of 200 installations of sink heaters and taking the increase in consumption over the year following installation, the average annual consumption totalled almost 10,000 cu.ft. where gas was used for cooking and 15,000 cu.ft. where electricity was used for cooking. They had no contract rates of any kind, but from Mr. Munro's information it would appear to be a sound basis of sale and the advantages from the consumer's point of view were obvious.

The point regarding satisfied consumers was worth noting. He did not think that the extent to which goodwill and personal recommendation affected sales was fully realized.

There was one point with regard to circulators. Did Mr. Munro advocate the fitting of isolating valves on flow and return connexions and a safety valve before the isolating valve on the flow pipe? The safety valve was, perhaps, obvious, but he asked for information because the practice of isolation did not appear to be at all general, and in his opinion it was a definite necessity.

The "block" system of charge had proved its worth, but it was surprising that the opinion was still held and forcibly expressed by the misinformed lay mind that the small consumer was, of necessity, the poor consumer. This fallacy died slowly. With regard to service, there was one point that seemed obscure. A lesson was pointed arising from consumer contact, and yet, by fitting governors to cookers, it was stated that 200 consumers did not need attention over a period of two years. Were these consumers not contacted during that period?

Co-ordination was very desirable, and the suggestion put forward for establishing a regional committee was excellent. The large buyer, by reason of his special rates, called forth a good deal of criticism upon the head of his smaller neighbour. Consumers visiting the cities were not easily convinced at their local showroom by the explanation of the difference in prices. He had a case recently where the price quoted by a neighbour for hire purchase turned out to be his own net price, fixed free.

The value of Home Service had been proved conclusively in the South, and it was his considered opinion that its introduction in the North had only to be tried to be proved. He considered that the system should be run in conjunction with a demonstration theatre within the undertaking's own premises. By this means a much more intimate contact was obtained, and confidence and goodwill maintained, but unfortunately very few undertakings had the necessary facilities, and Paisley was one of these.

Popularity of Hire-Purchase

Mr. R. J. GAVIN (Melrose) said the subject dealt by Mr. Munro was both difficult and important. The figures given showed the increasing popularity of the hire-purchase system in Edinburgh during the period 1934-1939, more especially the marked increase in recent years of the number of short-term contracts. Was this due to a change in policy or to the public demand for a three-years' contract instead of a longer one? He would also like to know whether the absence of cookers on a three-years' hire-purchase from 1934 to 1937 was due to the fact that three-year terms were not available at that time.

Public goodwill was a delicate plant and in Melrose they decided not to impose any check on sales by withdrawing hire-purchase or making onerous conditions on the outbreak of war. Custom once lost was difficult to win back, as witness the number of persons no eating less meat because of the difficulty in getting it some time back. Even in a small place like Melrose they found a ready market for returned hire-puchase appliances. The modern enamel finishes responded quickly to re-conditioning by their own men and, as Mr. Munro stated, they got an insight into those finishes best able to stand wear and tear.

Mr. Munro's remarks regarding rate charges were interesting but he wondered if the system he envisaged was not too elaborate. Basing a charge on mere size of house might lead to anomalies

and loss of goodwill. In this connexion he was all for simplicity —a fairly high initial rate with steep and rapid downward steps.

The Author's experience with one detail of his industrial load would be of more interest to those whose undertakings situated in industrial areas, but he wished to ask Mr. Munro if the high percentage of oxygen he mentioned in the flue gases was due to over-exhausting, and was this eliminated by reducing the chimney pull? He liked Mr. Munro's way of saying "It is easier to sell when you are volunteering a service than when you are conscripted to it." In other words, "one volunteer is worth ten pressed steel cookers." Regional standard prices were a thorny problem but he agreed with Mr. Munro that the question should be tackled right away and altogether.

A Remarkable Figure

Mr. W. KIRK (Motherwell) said he had been privileged to listen to Mr. Munro on many occasions and always he had something helpful to say. He was always provocative without being aggressive. It appeared from the Paper that the cookers sold on hire purchase and for cash totalled approximately 50,000 in the past 15 years. In Edinburgh they had 80,000 cookers in use at present and it would therefore appear that 65% of the consumers using cookers must own their appliances. This was a remarkable figure and the management in Edinburgh should be congratulated on their sales policy and organization. Hire purchase in the Motherwell area was of comparatively recent date, but the success attendant on the venture had justified its sponsors. The time was rapidly approaching when obstacles would present themselves and Mr. Munro's experience would assist them in avoiding trouble. Some consumers tired of a thing quicker than others and he wondered how long a housewife kept a cooker purchased outright or on hire-purchase terms. If a consumer wanted a change after 10 years he could not visualise her entering on a new transaction without an allowance being made for the old appliance. How was this difficulty got over? Was the fitting charge reduced or was there a definite scale in vogue which took into account the initial cost and life or was it left to the salesman to make the best of it? If a definite scale existed it would be of interest to know the principles on which it was constructed. He could visualize this position arising in his own area in the near future. He had thought of ascertaining the total consumption and calculating the actual profit over the period, and had endeavoured to correlate this with the depreciation value, but was still dissatisfied with the final determination. The number of cookers sold was impressive, but numbers were no criterion of success unless the consumption per consumer increased.

Mr. H. BOTTOMLEY (Caledonian Gas Corporation) said he would like strongly to support Mr. Munro's remarks regarding long term hire purchase. From experience he was convinced it was the best method, so far as supplying appliances was concerned. Any troubles that arose from it were of small consequence in actual practice. The old bogy of returns did not count. They could make a profit on returned appliances. In any case, their number was exceptionally low. The long term method was more beneficial to their Industry. The chances of a hire-purchase agreement being broken always decreased as more payments were made. He was surprised at the restriction on hire-purchase agreements in Edinburgh since war broke out. His Company was now putting out one type only on a five years' hire-purchase agreement, and was not insisting on any previous payment except the first deposit. Other appliances were being supplied on three-year terms. The question of flues had been mentioned, and in this connexion good work had been done by the B.C.G.A. and the Gas Industry generally to bring the need for adequate flues to the notice of building authorities and the public. He wished to ask Mr. Munro whether the higher average consumption for the multi-point was due to the fact that this appliance provided hot water on tap always.

Mr. Munro, in speaking of the training of gasfitters, had dealt with something important. A training centre was a good idea. Gasfitters in some areas did not enjoy the status of regular craftsmen. Some plumbers looked on a gasfitter as a man working on a sideline, but if a gasfitter understood the mechanism and maintenance of appliances he had as much knowledge and skill as the average plumber. The idea of a training centre should be supported.

Opportunity to Take Stock

Mr. DAVID FULTON (Helensburgh) said that one most valuable thought in Mr. Munro's Paper was that the war was making it difficult to get material, and that it was also restricting their activities. That gave them an opportunity to take stock and consider what their aims and policy should be to meet post-war conditions. They should be developing their resources and ideas so that later they might be in a position to go forward. He deprecated the comparison made between different places regarding the number of appliances sold. There were more vital considerations, and if these had been developed it would have meant a much more valuable Paper. In considering their future aims they would have had the benefit of Mr. Munro's experience and ideas on such matters, for example, as the limiting of the tremendously large number of appliances submitted to them by a thousand-and-one manufacturers. In their own interests their Industry should secure a considerable reduction in the number of appliances. They could then be sold much more cheaply. They had to remember that when the war ended many people would not be able to pay much money for appliances. The idea of having a training centre for gasfitters should be developed, and they should also give thought to the question of lady demonstrators. Most of their undertakings were too small to allow of the employment of a demonstrator. They knew that it was generally the same folks who attended all demonstrations. Mr. Munro was probably right in saying that there were 7,000 attendances at certain demonstrations in Edinburgh, but that probably represented about 4,000 people. They should be preparing for the future, and should weigh up the prospects and possibilities for the days to come.

Councillor KEIR (Paisley) said he spoke as a layman. The general public did not need to be convinced that a nice, white enamelled cooker was much better than the old range and that a gas fire, for intermittent heating, was superior to the burning of raw coal. He welcomed what Mr. Munro had said regarding gasfitters. In Paisley they had had some complaints due to the careless manner in which private contractors had put in the appliances. They could not sufficiently emphasize the need for training gasfitters. There was need for co-operation with regard to the placing of appliances, especially where the Gas Department was a Corporation affair. It was not sufficient for an architect to say: "We'll put a hole in the wall and stick a gas fire into it." The exact location of all appliances should be scientifically planned to give the best results.

Mr. R. W. COWIE, Junior (Hawick) remarked that at the present moment things were in a state of turmoil and they should be looking to the future and planning ahead. Otherwise they might miss a great opportunity. They had complained for a long time that their flat rate was too low. Now was their opportunity to do something in the way of tariffs. He thought that all gas engineers were convinced of the advantages of hire-purchase, and Mr. Munro's Paper would do much to convince any companies or directors who were in doubt on the subject. The sting of the Paper lay in what was said with regard to co-ordination and Home Service. Their commercial sections had outlived their usefulness because of price control. They should turn to regional marketing, to the training of gasfitters, and to the hiring out of canvassers. Encouraged by the example of a small undertaking in the North of Scotland they in Hawick had trained one of their staff to act as a demonstrator. She attended in the showroom and gave weekly cookery demonstrations as well. They had been well attended. Consumers would listen to a lady in the showroom who could prove by practical demonstration that the cookers would do what she claimed for them.

Mr. MUNRO, replying to the discussion, answered Mr. Smith's question regarding isolation in the negative. Edinburgh, he said, was conservative, though it was one of the first cities in the world to introduce a hot water system. In Paisley they had the main taps right up to the sink but it was not so in Edinburgh. He thought their gas sales in Edinburgh showed a substantial increase for a city that had few industries. He agreed with Mr. Fulton that they should be preparing for the future. He also shared his views regarding the multiplicity of appliances and had himself suggested that in Edinburgh they should limit the number they stocked. Replacement would then be easier and their staff would be better able to deal with repairs.

"OXIDE PURIFICATION"

Mr. JAMES M. DOW (Kirkcaldy) then gave his Paper on "Oxide Purification—War-time Practices and Substitutes." The Paper was published in last week's "JOURNAL."

Discussion

Mr. S. SMITH (Paisley) said that Mr. Dow had given them an excellent Paper on a very controversial subject and he wished to express his personal appreciation of it. At the same time, he could not agree with Mr. Dow that, without qualification, the better practice would be to change rotation after the first taker had dealt with a predetermined fixed volume of gas. He mentioned at a later stage that in carrying out activity tests care was taken to obtain a certain humidity and a definite temperature, and they must infer that similar conditions were attempted in actual practice. In spite of this, he ventured to suggest that Mr. Dow was entirely wrong in stating that each box would receive the same treatment. The H_2S content of crude gas varied considerably with different coals and so did oxygen content. The rate of absorption of H_2S by any oxide was directly affected by velocity of flow or, in other words, time contact. Another important factor was the amount of tar fog carried forward, and not the least important consideration was oxygen content at inlet to purifiers. All, or any, of these factors could, and did, vary from day to day and even from hour to hour in certain cases, and he suggested that to change rotation after a fixed quantity of gas had passed the first taker was probably one of the least reliable of working arrangements. It might be an improvement possibly on that of changing rotation every Thursday morning at ten o'clock, but little more. He would suggest that a more reliable guide was to take the H_2S content at inlet to the set and at the outlet of each box, for only by this means could a true indication of the working

of purifiers be obtained. In other words, they should change rotation after the first taker ceased to remove a predetermined number of grains of H_2S and, at the same time, keep a careful check on oxygen absorption throughout the set.

With regard to means of identification, a less complicated method of preparing an index was simply to letter the different batches. This was a method he had himself adopted successfully for many years. For example, a newly made-up batch received its identification letter, say "A." When it came out after a first fouling it became "A.1." and a small board about 9 in. square fixed to a stake, with the identification symbol painted on it, was stuck in the middle of the batch after emptying and remained throughout revivification. After the next fouling this became "A.2." and so on till that particular batch was spent. Other batches were lettered "B," "C," and so on. This method was easy and simple. He agreed with Mr. Dow that a batch should be allowed to complete its useful life without the addition of any new material.

With regard to humidifying, all of them had experienced the difficulty of attempting to give a batch the requisite moisture content by means of a water spray. Most of it ran off like water from a duck's back, and the result was never satisfactory. For those works possessing an oxide breaker a good method was to blow steam—preferably exhaust steam—into the machine through a flexible hose while breaking was taking place. After a little experience, it became a comparatively simple matter to judge the amount of steam required. Another advantage was that the use of steam prevented dust nuisance.

He was interested in the percentage given for a suitable oxide, because a mixture often used successfully was 75% Natural Dutch, 20% semi-spent, and 5% Lux. He was very fortunate in being bequeathed a stock of Natural Dutch, and in order to eke out this quantity, they were now using a blend of 60% prepared oxide, 15% Natural Dutch, 20% semi-spent, and 5% Lux. Unfortunately, this had not been in use long enough to give any useful information, except that it appeared to be working quite satisfactorily.

With regard to capacity, it was his experience that Fe_2O_3 content was not a very reliable guide. He remembered during the last war carrying out a series of fouling tests on similar lines to those mentioned by Mr. Dow, and the results of one Irish bog ore had always remained in his mind. Its Fe_2O_3 content was 28% on the dry basis, but its capacity when phenomenal. The pick up exceeded 60% after four foulings.

In the appendix to Mr. Dow's Paper, the determination of activity was given in detail, but no mention was made of the method of packing the fouling tower, which, to his mind, was most important. Predetermined humidity and temperature were of no value if there were "rat holes" through the charge, even if silver sand were used as a top dressing. He would also like to know if the sawdust was put through a standard sieve in order to obtain homogeneity of the mixture.

Examination of Substitutes

Mr. W. C. CAMPBELL (Galashiels) said there was no doubt that Mr. Dow's Paper came at a suitable time. They were all at present concerned with the problem of utilizing existing stocks of new and partially spent oxide in such a manner as to give the longest possible working life. They were also examining with interest and some trepidation the few substitutes, both natural and synthetic, which were available, and the gas engineer with good stocks of natural bog ore had reason to congratulate himself. He had recently made a purchase of some artificial oxide which was, he understood, composed chiefly of iron oxide produced from spent oxide, the sulphur having been removed by the usual method of burning. Sawdust in some quantity was added to provide a measure of porosity, but when dry the mixture had rather a dusty look. He therefore decided that it would be wise to use this mixture with some care. He had the bottom tier of bog ore, with artificial oxide in the middle tier and partially spent oxide on the top tier, the whole being topped with a 9 in. layer of fine breeze. The purpose of this arrangement was, of course, to prevent dust passing forward. The capacity and activity of most oxides were, he understood, influenced by a number of factors. Temperature and humidity of the gas had been mentioned but nothing had been said in the Paper with regard to the deleterious effects of tar fog. He had found this to be of great moment in the general scheme of purifier operation, as to some extent it influenced the length of time a box was able to deal with unpurified gas. In various works where tar extracting had been a little weak he had found the layer of breeze to be of great help. Again, activity could be and was influenced by the formation of $FeSO_4$, known as souring, and this could be prevented by judicious use of the ammonia washer to allow the boxes to be kept slightly alkaline. The general design and size of the plant were important factors.

Mr. R. FIFE (Kilmarnock) said he had tested the comparative life in the purifiers of 100% artificial oxide and 100% natural ore. He found, based on the quantities of gas passed, that the artificial oxide passed 60% as against 100% gas before the box required to be renewed. With the 50/50 mixture the box passed 95% gas compared with 100% with the natural ore. The cleaning in the case of the 100% artificial oxide was necessary as the result of back pressure and not fouling. He recommended a layer of natural ore on the surface of the top tier where the upward flow was practised to trap dust from the artificial oxide passing to the station meter or holders.

Need for Revolutionary Change

Mr. W. KIRK (Motherwell) said the question of dry purification was one of great complexity and he thought the time long overdue for a revolutionary change in this process. The present system of purification might be the best at the moment but they had to consider the drawbacks. When one considered the space taken up by the washers the space taken by the purifier boxes seemed out of all proportion. He had been asked questions on this subject when conducting parties round his Works. Of all the processes in the works the one most obnoxious to the men was the emptying and refilling of the boxes. It was true that mechanical handling could obviate some of the disadvantages, but how many of them could justify such expensive equipment, and there was no doubt that the equipment was expensive. Again, when the sulphur content reached 45 to 50%, the spent material had to be disposed of, but they did not pay railway carriage on the sulphur content alone, but for the tarry matter, the moisture, and all other foreign matter in the consignment. He felt strongly that a revolutionary change was overdue, and hoped that Mr. Dow's Paper foreshadowed the possible trend when he mentioned under "Substitutes" the wet purification process capable of arresting nearly all the sulphur compounds. The subject matter on this theme was not great, and for this reason, perhaps, Mr. Dow had not elaborated on it. Intensified experiments in this field would prove more fruitful than the perfecting of another artificial oxide. He could foresee replacement of plant when the war was over, and would prefer to see forward steps being taken rather than the perpetuation of the old system. He was interested in what was said regarding the red mud bing. He had watched the bing grow and had asked himself often if it could not be used for purification purposes. To-day his question had been answered, and he was grateful to Mr. Dow for the answer.

Mr. J. WINSTON SCOTT (Manchester) said that recently he had received an urgent call to a gas-works where an explosion had occurred. Picks had been used in emptying the oxide. A spark had been struck on a cast-iron stand and gas below the tier of oxide had been fired. Two of the purifiers had been destroyed, and this had occurred when working on the first layer.

Mr. R. D. KEILLOR (Greenock) said that the splendid attendance that day, in such difficult times, was a tribute to the popularity of the Association, their worthy President, and the two readers of Papers. It was also a demonstration of the members' confidence in the Government defence measures and a tribute to their gallant Air Force. Regarding Mr. Dow's Paper, he would like to know if he or any of the members had considered the possibility of arrangement whereby the oxide in purifier boxes could be agitated in order to break up the top crust which was usually the cause of back pressure. If such an arrangement could be provided the cost of oxide handling might easily be halved.

Mr. DOW, replying, said that if one had the time, material, skill, and men available, the boxes could be replaced after they had done a useful amount of work. But they did not all have the skill and the men. The experiments he had described were carried out in peacetime and the sawdust was ground to pass through the sieve. The breeze carpet suggestion from Mr. Campbell was, he thought, a good one. He agreed with Mr. Kirk that oxide purification was cumbrous, and it was worth while considering if anything better and cheaper could be devised.

LUNCHEON

At the luncheon in the North British Station Hotel, Mr. H. A. Aitken presided, and announced that a collection for Red Cross Funds amounted to £6 3s. 6d., which, with collections taken the previous day during the Golf and Bowling Competitions, made a grand total of £17 7s. He also announced that Mr. Archibald Kellock had been elected President of the Association, with Mr. R. M. Simpson (Denny) Junior Vice-President; Messrs. R. A. MacLaren, Newton-on-Ayr, and A. C. Rea, Perth, being elected members of Council.

Proposing the toast of "The Gas Industry," Lord Provost H. J. STEELE, of Edinburgh, said there was an interesting story behind the origin and progress of the Gas Industry. It was one of never-ending interest to experts and laymen alike. Over a century had passed since gas was first supplied in one or two places in a crude way for lighting purposes. To-day there were few people in this country who were not dependent on gas for one purpose or another. The Industry responsible for its manufacture and supply had grown to be one of the most important in the country, and in respect that it supplied their raw material was the mainstay of other industries. Out of the 12,000,000 families in the United Kingdom it had 11,000,000 consumers. To-day the Industry was on the threshold of fresh developments. To the impulse towards progress and expansion that came continually from within there was added the national call for more scientific utilization of the country's coal resources and for reorganization of industries to meet the changed conditions arising from the war. Research and experiment were being continually carried out to improve existing methods of manufacture and supply and to make these processes more economical and efficient. The Lord Provost said that in his own business gas was used in a tunnel kiln firing sanitary goods. He complimented Edinburgh Gas Department on the manner in

which they had carried out the installation. Over 100 years of experience had shown that in the Gas Industry there must be no standing still.

Responding to the toast, Mr. AITKEN stressed the national importance of the Gas Industry. It was, he said, in the country's interest that the public at large should know that every extra cubic foot of gas they consumed helped towards providing the sinews of war. The success of the Industry had been built up on service to the consumer and they must not relax their efforts in the more testing times that lay ahead.

A Debt of Gratitude

Mr. J. JAMIESON (Edinburgh), in handing over to Mr. Aitken a memento of his term of office, said he had a high regard for their retiring President as a man, an engineer, and an administrator. When he was elected to the Presidential Chair they expected much from him and they were not disappointed. He had discharged the duties of his office with distinction and it was difficult for them to liquidate the immense debt of gratitude they owed him for carrying out so ably the burden of office for two years, one of which had probably been the most difficult in the history of the Association. Had they been living in normal times with no salvage scheme, no shortage of precious metals, no symbol numbers or priorities, they might have risen to a Gold Medallion and even in those abnormal times they might have risen to a brace of medallions of standard design. As it was, however, Methil and Buckhaven would require to share with Leven the custody of his badge of office. Their President was the chief outward symbol of the dignity of their profession and that had been worthily upheld and jealously guarded by Mr. Aitken during the last two years. He had borne added burdens with conspicuous ability, diligence, and thoroughness.

Mr. AITKEN, accepting the badge of office, thanked the members and officials for their support. He expressed special indebtedness to Mr. Kellock, the former Secretary and now President-elect, and to Mr. Robert Sturrock, Secretary. They looked forward confidently to a successful year under the Presidency of Mr. Kellock.

Mr. KELLOCK said he accepted the office of President with some diffidence. He knew the names of the men who had gone before him and hoped to maintain the high standard they had set. Two of these names were outstanding in his memory. There was Alexander Yule, of Dundee, and there was J. W. Napier, of Alloa, and to both of these men he was indebted for his progress in the Industry.

Bailie A. T. LITTLE (Airdrie) expressed pleasure at the election of Mr. Kellock to the presidency and extended an invitation from Airdrie Town Council to hold the Spring Meeting at Airdrie. Mr. Aitken briefly returned thanks for the invitation.

Mr. LEWIS BAIN (Cullen) proposed a vote of thanks to the President, readers of Papers, and scrutineers, along with the Members of Council; and Mr. Robert STURROCK responded.

Bowls

The Annual Meeting of the North British Association of Gas Managers' Bowling Club was held at the Whitehouse and Grange Bowling Green on Thursday, Sept. 5. The senior Vice-President of the Association, Mr. A. Kellock (Airdrie) presented the prizes and the Bowling Trophy to the winning rinks. First prizes were presented to:

1. J. S. McGill, Slamanan.
2. A. Livingstone, Leven.
3. W. Mann, Strauston.
4. E. B. Tully, Edinburgh.

Second prizes were presented to:

1. J. Cooper, Leven.
2. R. Allan, Glasgow.
3. R. J. Philip, North Berwick.
4. J. Wood, Edinburgh.

At the Annual General Meeting Mr. P. Low (Elgin) was elected President of the Bowling Club for the ensuing year.

Cornish Gas Salesmen's Circle

The first wartime meeting of the Cornish Gas Salesmen's Circle was held at Camborne on Sept. 4 at 3.15 p.m., when a lecture was given by Mr. Mandy, of Ascot Gas Water Heaters, Ltd., entitled "Hot Water in Wartime," and a keen discussion followed. Tea was provided at the Regal Hotel at the kind invitation of the Chairman and Directors of the Camborne Gas Company, to whom thanks were tendered.

It is gratifying to note that the Cornish Circle is still alive and endeavouring to carry on under the present difficult conditions.

West Riding Regional Council of the National Joint Industrial Council for the Gas Industry have adjourned for two months the application of the National Union of General and Municipal Workers for the up-grading of Doncaster Gas Department.

NATIONAL GAS COUNCIL

Meeting of Central Executive Board

A meeting of the Central Executive Board of the National Gas Council was held at Gas Industry House on Tuesday, Sept. 10, under the Chairmanship of Sir DAVID MILNE-WATSON, Bart., LL.D., D.L.

Coal.—The position of gas undertakings and their supplies of coal was considered, and the action taken by the Officers in connexion with this matter was approved.

Demurrage.—A communication, addressed to the Government Department concerned, protesting against the claims for demurrage in view of the special conditions prevailing, was approved.

War Damage—Compensation.—After consideration, it was decided to refer this matter to the Urgency Committee with a view to the preparation of a draft Scheme in an endeavour to meet the case of the Gas Industry.

Gas Undertakings in "Evacuation" Areas.—It was reported that this matter was being dealt with by the Conjoint Conference of Public Utility Associations, and it was decided that the views of the Board should be conveyed to the Conjoint Conference accordingly.

Finance (No. 2) Bill.—A report was submitted with regard to the following matters affecting gas undertakings:

(i) Authority given to Commissioners of Inland Revenue to make regulations for the assessment and collection of Schedule E Tax—viz., deduction by employers of tax from salaries and wages.

(ii) Purchase Tax.

(iii) Deduction of Tax from dividends, &c., consequent upon the change in the standard rate of income tax.

Refined Tar, Pitch, and Creosote.—A communication from a District Tar Committee was considered and the steps taken to deal with the position were reported.

National Federation of Gas Coke Associations.—It was unanimously decided to allocate a sum to the Federation for launching a Solid Smokeless Fuels Economy and Efficiency Campaign, which was being undertaken in conjunction with the Hard Coke and Anthracite Industries at the request of the Government.

Reserved Occupations Committee.—A meeting held on July 3 was reported recommending representations to the Ministry of Labour, and emphasizing the difficulty which was being experienced owing to the transfer of men to other industries. The steps which the Officers had taken in connexion with this matter were approved.

British Gas Federation.—The following were re-nominated to serve on the Council for the year 1940:

Sir David Milne-Watson, Bart.
Mr. Wm. Cash.
Mr. T. P. Ridley, F.C.I.S.
Mr. C. S. Shapley.
Mr. A. W. Smith.

Gas Undertakings' Results

Cleveland

The Directors of the Cleveland Gas Company, in their report for the half-year ended June, state that the profit realized over this period has been £306, and that the amount brought forward from the previous six months was £3,012. The payment of a dividend for the half-year at the rate of 2½% per annum will leave to be carried forward to the next accounts the sum of £3,032, or £20 more than was brought in.

Bradford

The total sales of gas for the year ended March 31 by the City of Bradford Gas Department amounted to 1,779,369,000 cu.ft., which compares with 1,897,771,000 cu.ft. in the preceding twelve months—a decrease of 118,402,000 cu.ft., or 9.88%. For this falling off, the cessation of street lighting has been wholly responsible, inasmuch as sales of gas for other purposes than this show an increase over the previous year of just over 1%. The street lighting normally accounts for over 13% of the total sales of gas, but during the past year it amounted to only 3%. As a result of the intense and prolonged frost last winter, 179 cast-iron mains (varying from 2 in. to 9 in. in diameter) were broken. At March the Department had 75,236 meters maintainable at their own cost, as against 72,568 a year ago, and 79% of the meters in use are the property of the Department. Of these, 31,593 are prepayment meters. The Industrial Gas Section continues to make good progress, and many additional loads have been obtained during the year. A net profit on the year's working of £4,203 compares with a deficiency of £4,501 on the operations of the preceding twelve months. As from July of last year, the calorific value of the gas supplied was reduced from 500 to 475 B.Th.U.; the change being a very gradual one spread over three weeks.

NEW DRAKES VERTICAL INSTALLATION

AT a Gas-Works in the North of England an interesting ceremony took place yesterday when an installation of vertical retorts erected by Messrs. Drakes, Ltd., of Halifax, was inaugurated.

The site on which the new vertical installation has been erected was previously occupied by a derelict bench of horizontal retorts, which was accommodated in the original stone-built retort house. The old plant had been converted to regenerators, the cellar floor level being 9 ft. below ground level. As it was found necessary to put in a pile foundation to support the new vertical installation, it was decided that the existing cellar floor level should be the discharging floor level for the new installation.

The existing house being much greater in width than was necessary to accommodate the new plant, the latter was built within the space available, but the existing walls were left standing, the surplus being utilized for coke weighing and bagging purposes and, on the opposite side, for the accommodation of the coal receiving plant.

The whole of the foundations for supporting the carbonizing plant are formed with Franki compressed piles. The foundations for the coke plant were composed of Franki bored piles, as, on account of existing structures which had to remain in position, it was found impossible to employ driving piles. The whole of the piles were thoroughly tested and found perfectly satisfactory before any constructional work was proceeded with.

The existing buildings, being constructed in stone and of substantial architecture, necessitated careful consideration being given to the materials to be used and the design of the new house, and a determined effort was put forward to match this with the surrounding work and the amenities of the district. The whole of the steel structure is surrounded in panelled formation with artificial stone, suitably shaded, the wall tops being of the parapet design to disguise the customary span roofs, which are covered with Robertson's black corrugated sheeting and patent glazing. The window openings are formed with moulded concrete blocks and sills fitted with steel frames and glazing, the whole forming a building of good appearance and of substantial structure.

Carbonizing Plant

The new carbonizing plant of Drakes patent design comprises four settings, each containing four retorts, No. 65 model, which are constructed of Meltham toughened silica material throughout their entire length, with the exception of the fireclay top mouthpieces and the segmental cooling chambers at the base, the whole of the surrounding silica setting materials being of the same quality as the retorts.

Each setting is divided into units of two, and each chamber is provided with an independent gas and air supply, with regulators grouped in easily accessible positions. The arrangement permits of the temperatures of the settings being regulated with the minimum of effort to suit the varying output to meet any seasonal demand for gas. The method of draughting is such that when the required temperature is attained, further adjustments are seldom necessary.

Each retort has a throughput of 5¼ tons of coal per day when the plant is producing gas of 475 B.Th.U. quality. The whole of the brickwork forming the carbonizing plant is insulated with Moler insulating bricks.

The gas for heating the retorts is provided by means of a battery of four twin producers connected to the settings by means of a common flue and fitted with substantial damper boxes to enable any individual producer to be completely isolated as desired. The fireclay material in the construction of the plant is of Messrs. John Morton's manufacture. The whole of the steel structure for supporting the settings and producers is of a very substantial nature and is arranged in such a manner that the customary expansion is permitted without any undue strain being placed on any structural member. Spacious platforms for inspection purposes surround the whole of the plant, and are arranged at convenient heights and approached by staircases.

The coke chambers and extractors are of Drakes design and manufactured from their special "Rafrakton" metal. The discharging doors are of the self-sealing pattern with centre fasteners. Atomizing sprays are fitted in each coke chamber for the purpose of preventing the spread of fine dust during discharging operations. The sprays are automically regulated and controlled by the mechanism operating the extractors.

The throughput of each retort is individually controlled by means of masked ratchet gearing. Suitable arrangements are provided for admitting steam to each retort. Tecalemit forced lubrication is provided for all bearings on the extractors and drives, and is operated from a central point.

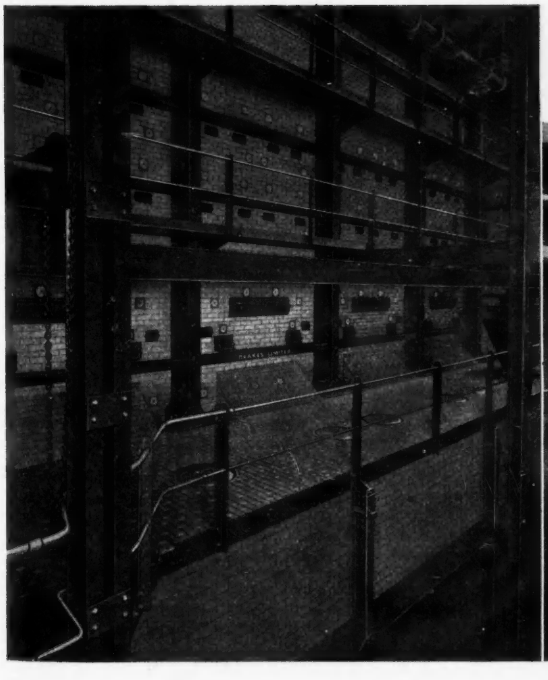
The gas passing through the foul main is controlled by a 15-in. Braddock's retort house governor with by-pass, and thence is connected into the works mains.

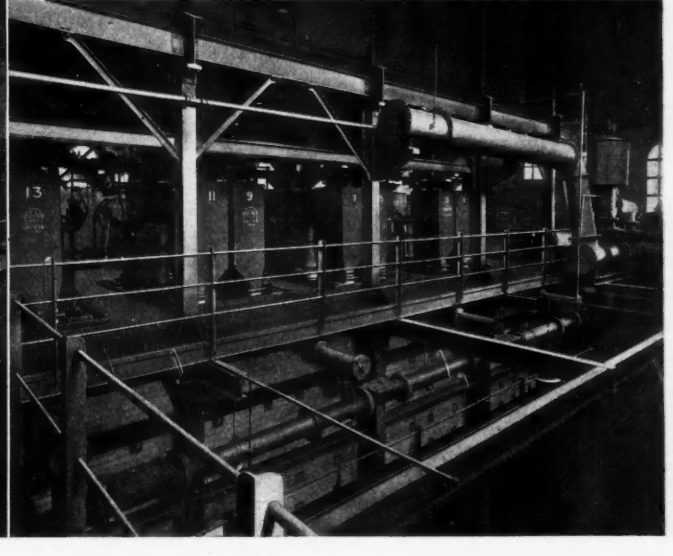
The charging platform is formed of steel chequer plates, and is exceedingly spacious, cool, and efficiently lighted, thus permitting the men to carry out their work in comfort.

The spent gases from the retort settings are conducted through steel-cased, brick-lined flues to a Spencer-Bonecourt waste heat boiler, situated on the charging platform. The boiler has a heating surface of 1,600 sq.ft. and a working pressure of 120 lb., and is operated by a "Sirocco" fan, driven by a De Laval turbine. As an alternative power unit, a D.C. motor is also incorporated. The boiler is complete with all the customary fitments, which include a Weir duplex feed water pump, in duplicate, and a Kennicott patent dejector.

An auxiliary producer is provided for the purpose of augmenting the supply of waste gas to the boiler at periods when the minimum number of retorts are in operation and insufficient waste heat is available to permit of the production of steam to meet immediate works requirements. The producer is cylindrical in shape, formed of M.S. plates with firebrick lining, and fitted with a step grate furnace. The offtake is connected direct to the waste gas flue.

An electric lift of 25 cwt. capacity, manufactured by Messrs. E. A. Foulds, Ltd., of Colne, is provided for all purposes.





On the left is a view of the producer platform and below a view of the charging platform of the new Drakes Vertical Retort Installation

Suitable landings are arranged at the producer floor level, charging platform level, coke screen level, and coal hopper level. The lift is fully automatic, can be operated from any landing, is equipped with automatic locking devices, and protected in accordance with Board of Trade regulations.

The extractor engines, in duplicate, are of Waller's exhauster type and steam driven. They are accommodated in a house built for the purpose and situated at the discharging floor level. The house also accommodates an electrically-driven Connersville blower. The electrical distribution panel is also arranged in this house. In an adjoining house, duplicate pumps are accommodated for liquor circulation purposes.

Coal Handling Plant

The existing overhead sidings have been retained, and the coal is deposited into a large receiving hopper from which it passes to either a Drakes two-roll breaker having a capacity of 40 tons per hour, or through the by-pass chute to the gravity bucket conveyor which encircles the retort house at the gable end at right angles to the plant. The gravity bucket is of the lipped bucket type and has a capacity of 50 tons of coal, or 25 tons of coke, per hour. The coal is deposited from the top strand of the conveyor on to a 24 in. rubber and canvas belt, which extends the length of the coal hoppers, and is fitted with a tipping carriage for the purpose of distributing the coal as desired.

The breaker is driven by means of a 15 h.p. motor, and the gravity bucket conveyor and band conveyor are driven respectively by a 10 h.p. and a 7 h.p. motor, all of the Lancashire Dynamo and Crypto Company's manufacture, gas-works type. The Tecalemit method of greasing is employed.

The coal hoppers are continuous and have a capacity of 48 hours' supply without trimming, and apart from the lift are provided with ample and accessible platforms reached by means of staircases from the charging stage level.

The coke discharged from the retorts passes through a hand-propelled travelling chute on to a 24 in. band conveyor running the full length of the bench, and delivered at the end into the gravity bucket conveyor, previously mentioned in the coal plant. This conveyor raises the coke and eventually delivers it through a chute on to the Drakes Zimmer screens which are driven by a 7 h.p. gas-works type motor.

The hoppers are part and parcel of the building structure and are divided into compartments to receive the various sizes of coke and have a total capacity of 150 tons. There is also an additional compartment of 15 tons capacity which receives the unscreened coke from the old horizontal retorts, or run of retort coke from the vertical plant. This is specially provided for feeding to the producers on the vertical plant.

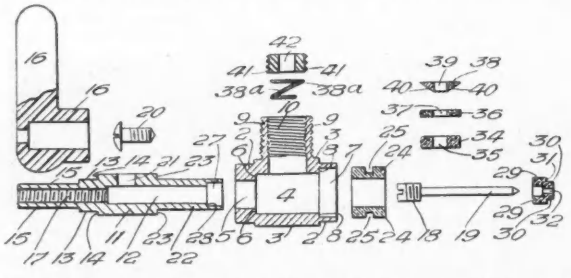
The bunkers are of steel framed construction, lined with seconds engineering bricks set in cement mortar and situated in such a manner to permit of any grade of coke being filled into railway wagons run on the existing overhead sidings. Static screens and chutes are also provided, with suitable platforms for bagging purposes, and additional chutes for supplying coke into road vehicles.

Provision has also been made for the storage of coke for filling the retorts after scurfing operations, a run-way carriage being provided for this purpose. A similar carriage is also in operation for replenishing the supply of coke to the producers. The existing telpher track in connexion with the horizontal plant has been extended to permit of the coke from this plant being dealt with by the new coke plant. All the motors are operated by Brookhirst starters.

Non-Leak Gas Tap

A. Stewart, of Melbourne, Australia, has taken out a patent (No. 522,698; application date, Dec. 13, 1938) for a non-leak gas tap. Fig. 1 is a sectional view. The invention includes a casing 2 the top, bottom and sides of which are flat or square as indicated at 3. Formed through the shell is a longitudinal passageway indicated at 4. This is reduced at one end, as at 5, to form an internal circumferential step 6, and it is enlarged at its other end, as at 7, to form an internal circumferential step 8. Integral with the shell or casing 2 and disposed at right-angles thereto is an externally-threaded lateral neck 9. This is also internally threaded as indicated at 10.

Within the casing is a gas control plug 11 having formed through its centre a gas passageway indicated at 12. The plug at one end 13 is reduced to form a first external circumferential step or shoulder 14 adapted to bear against the internal step or shoulder 6 of the shell or casing 2. The reduced portion 13 extends beyond the casing and is provided with flats 15 adapted to receive a handle 16. The longitudinal hole or passageway 12 is internally threaded as at 17 at the reduced end 13 of the plug 11. Accommodated in the threaded end 17 of the passageway 12 is the threaded head 18 of a regulating rod 19, the other end of which is tapered or coned. Accommodated in the outer end of the internally threaded portion 17 of the passageway 12 and retaining the handle 16 on the reduced end 13 of the control plug 11 is a screw 20. Formed in the control plug at one side thereof,



and passing from the outside of the plug to the longitudinal passageway 12 therein is a gas inlet radial hole indicated at 21. The end of the control plug 11 opposite to the handle bearing end is reduced as at 22 to form a second external circumferential step 23 aligned when the plug is in position with the internal step 8 of the shell 2.

Encircling the inner portion of the reduced end 22 of the control plug and bearing against the shoulders 8 and 23 is a closing ring 24 having an external circumferential groove indicated at 25. When the control plug 11 has been placed in the casing and the ring 24 also has been placed in position the adjoining end of the casing 2 which is formed of soft metal is squeezed by a suitable tool into the groove 25. The plug 11 is thus locked permanently in the casing 2 and cannot be removed by the householder or other unauthorized person.

The longitudinal hole or passageway 12 enlarged as at 27 to form an internal circumferential step or shoulder 28 at the reduced end 22 of the control plug 11. Accommodated in the enlarged end 27 of the passageway 12 and bearing against the step 28 is a nozzle 29 having a reduced outer end 30 and an external circumferential step or shoulder 31. The nozzle is provided with a discharge orifice indicated at 32. When the nozzle has been placed in the enlarged end 27 of the passageway 12 the adjoining end of the plug 11 which is formed of soft metal is squeezed by a suitable tool over the step 31. The nozzle 29 is thus locked permanently in the end of the plug 11.

Accommodated in the neck 9 and bearing on the plug 11 is a white metal or other suitable soft metal packing washer or member 34 having a central inlet hole indicated at 35. Bearing on the member 34 is a rubber or other suitable resilient packing washer or member 36 having a central inlet hole indicated at 37. Bearing on the member 36 is a brass or other suitable metal packing washer 38 having a central inlet hole indicated at 39 and a coned or bevelled lower face 40. Bearing on the member 38 is a coiled spring 38a. Threaded into the neck 9 and bearing upon the spring 38a is a retaining plug 41 having a central inlet hole indicated at 42. The plug may be provided with a diametral groove indicated at 43 to accommodate a screw driver. It will been seen that the inlet holes of the plug 41 and members 34, 31, and 38 are aligned to provide a common gas passageway through the neck 9.

The gas control plug containing the regulating rod 18, 19, is fitted into the casing 2 with the reduced end 13, 15, of the plug projecting to receive the handle 16. The coned end or point of the regulating rod is in line with the discharge orifice 32 of the nozzle 29 and by longitudinal adjustment of the rod, by means of a screw driver or the like entered into the internally threaded end 17, the pressure of gas passing from the longitudinal hole or passageway 12 obviously may be regulated. The handle is retained by means of the screw 20 which also serves to close the threaded end of the hole 12 and to screen the head 18 of the rod 19. The plug 11 is disposed in the casing 2 so that the radial hole 21 by rotation of the plug may be aligned with the central hole or gas passageway through the neck 9. The packing washers or members 34, 36, and 38 are compressed by the spring 38a and retaining plug 41. The soft metal member 35 is forced tightly against the control plug 11 and conforms to the shape or curvature thereof. The resilient member 36 is forced outwardly from its hole 37 by the coned lower face of the member 38, the whole forming gas tight joints. The plug 11 cannot be removed from the casing 2 by reason of the inturned end 26 and the closing ring 24 retained by it. Similarly, the nozzle 29 cannot be removed by reason of the inturned end 33 and the reduced portion 22 of the plug 11. The tap is connected by the extremely threaded neck 9 with the gas supply. When the control plug 11 is rotated to align its radial hole 21 with the gas inlet passageway formed by the holes 35, 37, 39, 42, the gas flows into the longitudinal hole or passageway 12 and passes through the orifice 32 to the gas burner of the stove or analogous apparatus to which the tap is fitted. When the control plug 11 is rotated to remove its radial hole 21 from alignment with the gas entrance passageway of the neck 9 the gas is obviously prevented by the plug from flowing and it also is prevented from leaking past the plug 11 by the packing described.

Gas Products Prices

The London Market

Sept. 9.

There are no changes to record in the values of Tar products in the London market, present values being as under: Pitch remains nominal, creosote is about 4¾d. to 5d. per gallon, refined tar 3¾d. to 4d., the price of pure toluene under the Ministry of Supply Toluene No. 2 Order is 2s. 5d. per gallon, pure benzole 1s. 10d., 95/160 solvent naphtha 1s. 11d. to 2s. 0d., and 90/160 pyridine about 17s. 6d. all per gallon naked, refined naphthalene crystals £23 per ton in bags, all *ex* Makers' Works.

The Provinces

The average prices of gas-works products during the week were: Pitch and Crude Tar.* Toluole, naked, North, 1s. 9½d. (Controlled by the Ministry of Supply Order No. 1, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North 9d. to 9½d. Solvent naphtha, naked, North, 1s. 8d. to 1s. 9d. Heavy naphtha, North, 1s. 4½d. to 1s. 5½d. Creosote, *ex* works, in bulk, North liquid and salty, 4½d. to 4¾d.; Scotland, 4¼d. to 4¾d.; low gravity, 4½d. to 4¾d. Fuel Grade, 4d. to 4¼d. Carbolic acid, 60's, 3s. 6d. to 3s. 7½d. Naphthalene, £15 to £20. Salts, 75s. to 85s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal. Heavy oil: Unfiltered anthracene oil, (min. gr. 1.080), 5¼d. to 5½d.; filtered heavy oil (min. gr. 1,080), 5¾d. to 6d.; heavy anthracene oil gr. less than 1,080, 6d. to 6¼d.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note in our issue of Sept. 4, p. 404.

Scotland

GLASGOW, Sept. 14.

Trading continues on a moderate scale, but prices generally are unchanged from last week.

Refined tar.—There is a small but steady outlet for this product at 4¼d. to 4½d. per gallon for home trade. Export enquiries are rather few and quotations are in the region of 3½d. per gallon, both f.o.r. naked.

Creosote oil.—This product is in good call at about the following levels: Specification oil, 5d. to 5¼d. per gallon; low gravity, 6d. to 6¼d. per gallon; neutral oil, 5¾d. to 6d. per gallon; all *ex* Works in bulk.

Cresylic acid.—There is still practically no demand for this, and it is readily obtainable at the following prices: Pale, 99/100%, 2s. 2d. to 2s. 4d. per gallon; Pale, 97/99%, 1s. 11d. to 2s. per gallon; Dark, 97/99%, 1s. 7d. to 1s. 9d. per gallon; all *ex* Works in buyers' packages.

Crude naphtha.—Available supplies are well looked after at 6¾d. to 7¼d. per gallon *ex* Works in bulk, according to quality.

Solvent naphtha.—90/160 grade is 1s. 8¼d. to 1s. 9d. per gallon and 90/190 heavy naphtha is 1s. 4½d. to 1s. 5½d. per gallon.

Motor benzole is 1s. 8d. to 1s. 8½d. per gallon.

Pyridine.—90/160 grade is 17s. to 18s. per gallon and 90/140 grade is 19s. to 20s. per gallon.

THIS WEEK'S ADVERTISERS

	PAGE
Alder and Mackay, Ltd.	Cover I
Ashmore, Benson, Pease, & Co., Ltd.	478
Averill C. R., Ltd.	481
Bale & Church, Ltd.	510
Baldwins, Ltd.	509
Balfour, Henry, & Co., Ltd.	474
Blakeley, Firth, Sons, & Co., Ltd.	Cover II, 510
Bray, George, & Co., Ltd.	512
Broadbent, J. C., & Co., Ltd.	510
Brotherhood, Peter, Ltd.	489
Clough (Croydon), Ltd.	Cover IV
Cookson Lead & Antimony Co., Ltd.	476
Cowan, W. & B.	Cover III
Crane, Ltd.	483
Dempster, R. & J., Ltd.	473
Dempster, Robert, & Sons, Ltd.	498, 510
Derbyshire Silica Firebrick Co., Ltd.	509
Donkin Co., Ltd. (The Bryan)	Cover II
Drakes, Ltd.	477
Ellison Insulations Ltd.	510
Foster, Blackett & James, Ltd.	476
Gas Meter Co., Ltd.	Cover IV
Gas Purification and Chemical Co., Ltd.	510
Glover, Thos., & Co., Ltd.	490
Grace, Henry & Co.	476
Holmes, W. C., & Co., Ltd.	511
Humphreys & Glasgow, Ltd.	488
Incandescent Heat Co., Ltd.	482
Jenkins, W. J., & Co., Ltd.	484
Johnson, C. H., & Sons, Ltd.	482
Keith Blackman, Ltd.	512
Kleenoff Co.	510
Laidlaw, R., & Son (Edin.), Ltd.	508
Lane, George & Sons, Ltd.	476
Le Bas Tube Co., Ltd.	481
Librex Lead Co., Ltd.	476
Locke, Lancaster & W. W. & R. Johnson & Sons, Ltd.	476
Londex, Ltd.	510
London Lead Oxide Co.	476
Macpherson, Donald, & Co., Ltd.	487
Main, R. & A., Ltd.	504
New Bowson Coal Co.	509
Oxley Engineering Co., Ltd.	479
Parkinson Stove Co., Ltd.	501
Parkinson, W., & Co.	490
Peebles & Co., Ltd.	485
Radiation, Ltd.	502, 503
Reavell & Co., Ltd.	508
Slingsby, Walter, & Co., Ltd.	486
South Hetton Coal Co., Ltd.	Cover IV
South Metropolitan Gas Company	505
Spencer-Bonecourt, Ltd.	487
Stanton Ironworks Ltd.	510
Staveley Coal & Iron Co., Ltd.	485
Strachan & Henshaw, Ltd	510
Stringer Bros.	486
Sutcliffe, Speakman & Co., Ltd.	474
Sutherland Meter Co., Ltd.	480
Trotter, Haines, & Corbett, Ltd.	510
Walker, C. & W., Ltd.	486
Wakelin, F. H., Ltd.	510
Watkins & Watson, Ltd.	510
Wellington Tube Works, Ltd.	Cover IV
West's Gas Improvement Co., Ltd.	506
Whessoe Foundry & Engineering Co., Ltd.	475
Woodall-Duckham Co., Ltd.	497
Wright, Alex., & Co., Ltd.	478

Contracts Open	509
Plant, &c.	510
Plants, &c., Wanted and for Sale	510
Publications	510

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GAS STOCKS AND SHARES

Quotations on the London and Provincial Stock Exchanges

OFFICIAL LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Sept. 6.	Rise or Fall on Week.
1,767,439	Mar. 11	8	7	Alliance & Dublin Ord. ...	105—115	...
374,000	July 1	4	4	Do. 4 p.c. Deb. ...	90—95	...
957,608	May 13	5	5	Asscd. Gas & Water U'd'ts Ord.	12/—14/	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	15/6—17/6	...
535,545	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	14/6—16/6	...
336,646	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	12/—14/—	...
561,370	Aug. 12	7	7	Barnet Ord. 7 p.c.	105—115	−3½
300,000	Apl. 8	1/4⅝	1/9⅜	Bombay, Ltd.	19/6—21/6	...
690,407	Agu. 19	7	7	Bournemouth 7 p.c. max.	100—110	...
362,025	June 17	4	4	Do. 4 p.c. Deb. ...	90—95	...
659,955	Aug. 19	6¾	4⅜	Brighton, &c., 5 p.c. Con. ...	67—77*	...
855,000	Mar. 11	7	8	Brit. Gas Light Ord.	77—87	...
545,000	June 17	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	,,	4	4	Do. 4 p.c. Red. Deb.	75—80	...
10,000	Nov. 6, '33	6	4	Cape Town, Ltd., 4½ p.c. Cu. Pf.	¼—¾	...
626,860	July 15	5⅜	6	Cardiff Con. Ord.	89—94	...
24,500	Apl. 8	7	7	Colombo Ord. 7 p.c. Pref. ...	19/6—21/6	...
764,169	Mar. 26	−/11.48	−/11.48	Colonial Gas Assn. Ltd. Ord. ...	14/6—16/6	...
400,000		1/3.30	1/3.30	Do. 8 p.c. Pref. ...	20/—22/—	...
1,748,935	July ,,	2	3	Commercial Ord.	37—42	...
620,000	June 10	3	3	Do. 3 p.c. Deb.	58—63	...
286,344	Aug. 19	5	5	Do. 5 p.c. Deb.	88—93	...
807,560	Aug. 12	7	6	Croydon sliding scale	87—92	...
644,590	,,	5	5	Do. max. div.	90—85	...
620,385	July 1	5	5	Do. 5 p.c. Perp. Deb. ...	90—95	...
179,500	Aug. 19	5⅜	5	East Surrey 'B,' 5 p.c.	75—80	...
176,461	June 17	5	5	Do. 5 p.c. Deb. (Irred.)...	90—95	...
250,000	July 8	4	6	Gas Consolidation Ord. 'B' ...	13/—15/—	...
250,000	May 13	4	4	Do. 4 p.c. Red. Cum. Pref.	15/—17/—	...
19,152410	July 29	3⅜	4½	Gas Light & Coke Ord. ...	14/6—15/6a	+−/3
2,600,000	,,	3½	3½	Do. 3½ p.c. max.	54—59	...
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref. ...	72—77	...
2,993,000	July 8	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	78—83	...
8,602,497	June 3	3	3	Do. 3 p.c. Con. Deb. ...	65—70	...
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb. ...	99—104	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	98—103	...
700,000	Mar. 11	3½	3½	Do. 3½ Red. Deb.	80—85	...
5,600,000	May 13	4	8	Imperial Continental Cap. ...	38—43	+1
43,820	July 29	3½	3½	Do. 3½ p.c. Red. Deb. ...	63—68	...
231,978	Aug. 19	5	5	M.S. Utility 'C' Cons.	68—73	...
918,657	,,	4	4	4 p.c. Cons. Pref.	72—77	...
675,000	May 6	†4	†4	Montevideo, Ltd.	52—57	...
300,000	Apl. 29	9	7	Oriental, Ltd.	100—110	...
368,537	June 3	7	8	Plymouth & Stonehouse 5 p.c.	90—100	...
621,667	Aug. 19	8½	7½	Portsmouth & Gosport Cons.	97—102	...
648,999	Apl. 29	1/1½	1/1	Severn Val. Gas Cor. Ld. Ord.	14/—16 –	...
597,972	Mar. 11	−/10½	−/10½	Do. 4½ p.c. Cum. Pref. ...	16/—18/–	...
2,528,714	Sept. 2	1/–	/7½	South East'n Gas Cn. Ld. Ord.	9/6—11/6*	−1/6
1,000,000	,,	−/10½	−/10⅝	Do. 4½ p.c. Red. Cum. Pref.	14/—16/–*	...
1,068,869	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	13/—15/–*	...
6,709,895	Aug. 5	4	4	South Met. Ord.	53—58	+2
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pref. ...	98—108	...
850,000	,,	4	4	Do. 4 p.c. Irred. Pref. ...	70—75	...
1,895,445	July 1	3	3	Do. 3 p.c. Perp. Deb. ...	60—65	...
1,000,000	July 15	5	5	Do. 5 p.c. Red. Deb. ...	95—100	...
1,543,795	July 22	3	4	South Suburban Ord. 5 p.c. ...	60—70	...
512,825	July 8	5	5	Do. 5 p.c. Perp. Pref. ...	88—93	...
500,000	,,	4	4	Do. 4 p.c. Perp. Pref. ...	71—76	...
250,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	80—85	...
888,587	June 10	5	5	Do. 5 p.c. Perp. Deb. ...	90—95	...
750,541	Aug 9	5½	5	Southampton Ord.	65—70	...
350,000	Aug. 12	5½	5½	Swansea 5½ p.c. Red. Pref. ...	90—95	...
1,076,495	Aug. 5	5	5	Tottenham & District Ord. ...	68—78	...
338,555	,,	5	5	Do. 5 p.c. Pref.	80—85	−8
453,380	June 10	4	4	Do. 4 p.c. Perp. Deb. ...	78—83	...
1,247,505	May 20	4	6	U. Kingdom Gas Cor. Ord. ...	12/—14/–	...
1,085,952	May 13	4½	4½	Do. 4½ p.c. 1st Cum. Pref. ...	14/—16/–	...
772,709	,,	4	4	Do. 4 p.c. 1st Red. Cum.Pref.	14/—16/–	...
745,263	June 17	4½	4½	Do. 4½ p.c. 2nd Non.Cum. Pf.	12/6—14/6	...
1,200,000	Mar. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	83—88	...
380,606	Aug. 5	7	6⅝	Uxbridge, &c., 5 p.c.	80—90	−10½
1,371,138	July 8	3½	4	Wandsworth Consolidated ...	65—75	+½
2,525,768	,,	4	4	Do. 4 p.c. Pref.	65—70	−2
1,343,964	June 17	5	5	Do. 5 p.c. Deb.	90—95	...
383,745	,,	4	4	Do. 4 p.c. Deb.	80—85	...
558,342	July 15	6	5	Watford & St. Albans Ord. ...	88—93	...
300,000	June 10	3½	3½	Do. 3½ p.c. Red. Deb. ...	85—90	...

SUPPLEMENTARY LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Sept. 6.	Rise or Fall on Week.
351,685	June 17	5	5	Brighton, &c., 5 p.c. Perp. Deb.	90—95	...
28,700	,, 17	5½	5½	Do. 5½ p.c. Red. Deb. 1942 ...	96—101	...
415,250	,, 17	4	4	Bristol Gas Co., 4 p.c. New Deb.	85—90	...
140,205	July 29	7	7	Cambridge, &c., 7 p.c. Cons. 'B'	100—110	...
295,932	Aug. 19	5	5	Cheltenham, 5 p.c. Cons. Ord....	88—93	...
42,500	July 1	4	4	Do. 4 p.c. Perp. Deb....	82—87	...
150,000	Aug. 12	4	4	Croydon Gas, 4 p.c. Pref. (Irr.)	70—75	...
130,000	July 1	4	4	Do. 4 p.c. Deb. ...	75—80	...
146,700	Aug. 19	5½	5½	East Surrey, 5½ p.c. Pref. 'A' ...	95—110	...
53,220	,, 19	6	6	Do. 6 p.c. Cum. Pref. ...	100—110	...
117,425	Feb. 5	8	8	East Wight, 5 p.c. Cons. Ord. ...	100—110	...
...	Aug. 19	6	4	Eastbourne, 'B' 3½ p.c.... ...	65—75	...
239,135	July 8	5	5	Gas Consolidation 'A' Ord. (£1)	13/6—15/6	...
156,600	Aug. 19	5	5	Hampton C't, 5 p.c. Cons. Ord.	68—73	...
18,000	June 10	7	7	Malta & Med'n., 7 p.c. 1st Pref.	60—65	...
10,845	,, 10	7½	7½	Do. 7½ p.c. 2nd Pref.	60—65	...
50,000	Aug. 19	£5 19 6	£5 4 6	Mid. South. Util., 'A' Cons. 5 p.c.	63—73	...
65,000	Aug. 12	5	5	North Middlesex, 5 p.c. Pref. ...	85—90	...
70,000	Mar. 11	5	5	Plymouth & Stone., 5 p.c. Deb.	90—95	...
76,501	July 1	4	4	Reading, 4 p.c. Perp. Deb. ...	75—80	...
74,777	April 1	4	4	Romford, 4 p.c. Debs. (Reg.) ...	85—90	...
21,000	June 10	5	5	Slough, 5 p.c. Perp. Deb. ...	90—95	...
211,740	,, 17	5	5	Southampton, 5 p.c. Red. Deb.	96—101	...
363,575	July 1	5	5	Tottenham, 5 p.c. Reg. Red. Mt.	95—100	...
202,019	Mch. 18	7½	6¾	Tunbridge Wells, 4 p.c. Scale ...	70—80	...
135,257	June 10	5	5	Uxbridge &c., 5 p.c. Perp. Deb.	90—95	...

PROVINCIAL EXCHANGES

347,756	July 26	6	5	Bath Cons.	98—103	...
122,577	Feb. 19	7	7	Blyth 5 p.c. Ord.	109—111	...
1,667,250	July 15	5	5	Bristol, 5 p.c. max.	90—92	...
120,420	June 17	4	4	Do. 1st 4 p.c. Deb.	94—96	...
415,250	,,	4	4	Do. 2nd 4 p.c. Deb. ...	92—95	...
328,790	,,	5	5	Do. 5 p.c. Deb.	108—111	...
157,150	Aug. 5	6½	5	Chester 5 p.c. Ord.	98—101	...
92,500	June 17	4	4	Do. 4 p.c. Pref.	80—85	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	80—85	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	94—98	...
542,270	Feb. 12	6	9	Derby Cons.	103—108	...
55,000	June 10	4	4	Do. 4 p.c. Deb.	96—102	...
10,000	Aug. 19	10	10	Great Grimsby 'A' Ord. ...	170—180	...
6,500	,,	10	10	Do. 'B' Ord. ...	170—180	...
79,000	,,	10	10	Do. 'C' Ord. ...	160—170	...
732,000	Feb. 19	4	4	Hartlepool G. & W. Cn. & New	63—68	...
2,167,410	Aug. 19	6	6	Liverpool 5 p.c. Ord.	96—98	...
245,500	June 17	5	5	Do. 5 p.c. Red. Pref. ...	97½—100½	...
306,083	July 15	4	4	Do. 4 p.c. Deb.	99—101	...
20,000	June 24	5	5	Long Eaton 5 p.c. Pref.	9—11	...
80,000	June 24	5	5	Do. 5 p.c. Deb.	100—105	...
2,430,267	July 29	5 7/40	5	Newcastle and Gateshead Con.	15/6—16/6a	...
682,856	,,	4	4	Do. 4 p.c. Pref.	73—75	...
776,706	Dec. 27	3½	3½	Do. 3½ p.c. Deb.	80—85	...
277,285	April 24	5	5	Do. 5 p.c. Deb. '43 ...	97—102	...
274,000	July 26	5	5	Newport (Mon.) Ord.	89—93	...
13,200	Mch. 26	7	8½	Pontyp'l Gas & W. 10 p.c. 'A'	11½—12½	...
13,600	,,	5	6	Do. 7 p.c. 'B'	9½—10½	...
40,000	,,	5	6	Do. 7 p.c. 'C'	9½—10½	...
106,280	Aug. 5	8	10	Preston 'A' 10 p.c.	157—167	...
188,219	,,	7	7	Do. 'B' 7 p.c.	113—123	...
1,806,339	Aug. 26	6½	6½	Sheffield Cons.	117½—120½	...
95,000	July 8	4	4	Do. 4 p.c. Deb.	97— 99	...
332,351	Feb. 5	6	6	Sunderland 6 p.c. max. ...	107—112	...
140,778	Aug. 12	5	5	Weston-super-Mare Cons. ...	87—90	...
64,338	June 24	4	4	Do. 4 p.c. Deb.	90—95	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	137—145	−4

a.—The quotation is per £1 of Stock. * Ex. div. † Price free of income-tax.

Results at Glasgow

The total quantity of gas delivered and accounted for during the twelve months ended May 31 last by the City of Glasgow Gas Department was 9,398,594,747 cu.ft., which compares with 9,905,054,117 cu.ft. in the preceding year—a decrease of 506,459,370 cu.ft., or 5.113%. The Industrial Section has been very active during the year, and the technical staff have been increasingly engaged with the design and installation of equipment, which has developed considerably on account of the existing conditions. The number of meters in use at the end of May was 340,903, which compares with 338,553 a year ago. Ordinary type meters show a decrease of 910, while the number of prepayment meters has increased by 3,260. The balance carried to profit and loss account is £181,765 (against a debit last year of £13,881), and there is a surplus on the year's operations of £47,634.

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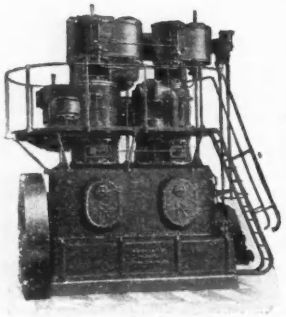

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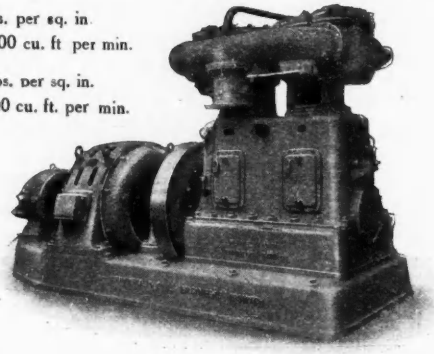

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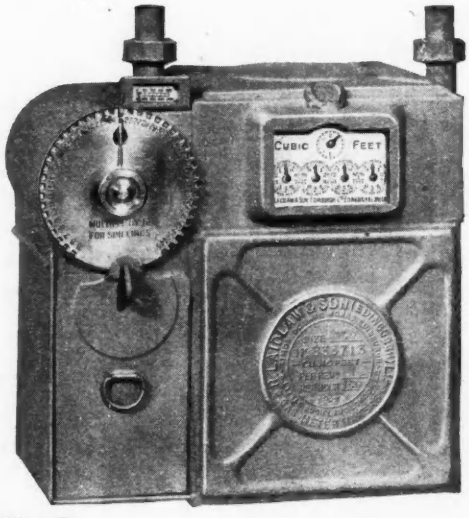

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CONTENTS

EDITORIAL NOTES.

Public Service 529
The North British Meeting 529
Gas for Motor Transport 530
Tribute 530
A Long Pull and a Strong Pull ... 530

Quarterly Index Notice 529
Forthcoming Engagements 530
North British Association Golf Circle 530
Personal 531

British Standards Specification ... 531
Repairing Holder Damage 531
Compressed Oil Gas in Place of Coal Gas 532
Three New Food Films 532
Trade News 532
The Technology of Gas Manufacture —Fuel-Flue Gases (American Gas Association, New York, 1940) ... 535
Constitution of Artificial Carbohydrate Coals (from *Industrial Engineering and Chemistry*). By E. Berl and W. Koebber 536

New Patents:
A Gas Fire Patent 541
Cooker Splash Plates 541
Lubrication of Dry Gas Meters ... 542
Coke Discharge in Intermittent Verticals 542
Burner for Gas-Fired Boilers ... 543
Gas Undertakings' Results 543

Products Prices 545
Dividend Announced 545

Gas Stocks and Shares 547
Stock and Share Lists 547

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Advertisement Index, see p. 545.

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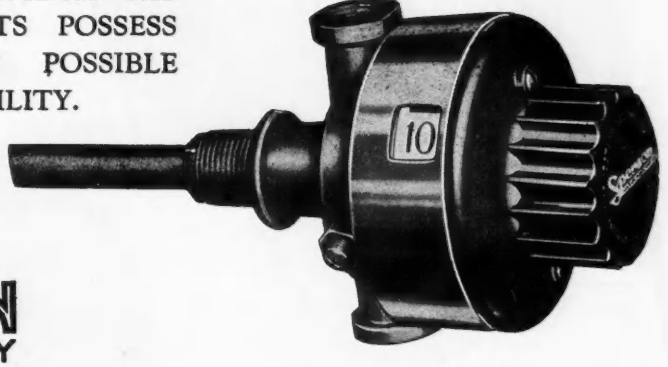

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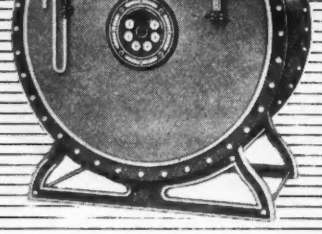

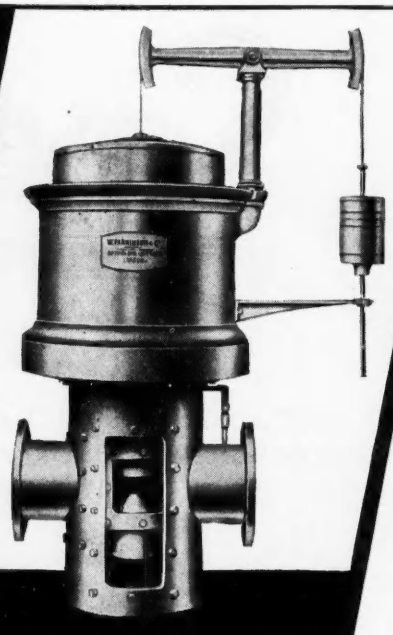

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P6